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Job No.: 1505-102048

Ref.: DE3615918A1

Translated from German by the Ralph McElroy Translation Company  
910 West Avenue, Austin, Texas 78701 USA

FEDERAL REPUBLIC OF GERMANY  
GERMAN PATENT OFFICE  
PATENT NO. 36 15 918 A1

Int. Cl.<sup>4</sup>:

B 08 B 1/04  
//A 47 L 23/06  
B 24 B 29/00

Filing No.:

P 36 15 918.2

Filing Date:

May 12, 1987

Date Laid Open to Public Inspection:

November 19, 1987

HAND-OPERATED CLEANING DEVICE

Inventor:

Eckart Mayer  
2411 Sandesneben, DE

Applicant:

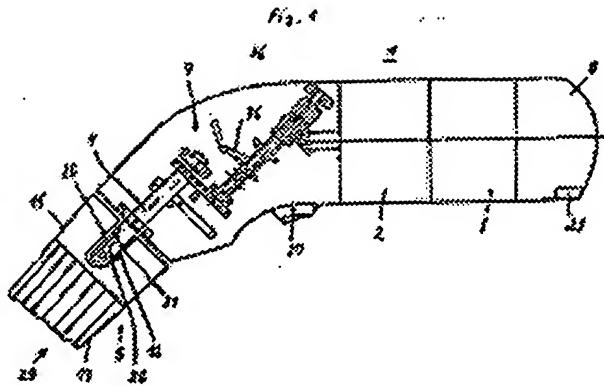
Eckart Mayer  
2411 Sandesneben, DE

Agent:

Dr. J. Schmidt-Bogatzky  
2000 Hamburg  
Dr. R. Wilhelms  
Dr. H. Kilian  
patent attorneys, 8000 Munich

Abstract

The invention pertains to a hand-operated cleaning device with a motorized drive unit to which at least one rotating brush is connected. The device consists of a device holder 1 with an electric motor 2 that is connected to a battery or a storage battery 3 and that is operatively connected on the output side to a rotatable spindle 4. The spindle 4 is connected to a brush 5 (Figure 1).



### Claims

1. A hand-operated cleaning device with a motorized drive unit to which at least one rotatable brush is connected, characterized by a device holder (1, 50) with an electric motor (2) that is connected to a battery or a storage battery (3) and that is operatively connected on the output side to a rotatable spindle (4), wherein said spindle is separably connected to a brush (5, 28) or a polishing pad (14).
2. The cleaning device according to Claim 1, characterized by the fact that the brush (5, 28) or the polishing pad (14) is attached to the section (26) of the spindle (4) that lies outside the device housing (6).
3. The cleaning device according to Claim 1, characterized by the fact that the brush (5, 28) or the polishing pad (14) contains a spindle that can be inserted into a holding recess in the rotatable holding section of the spindle (4).
4. The cleaning device according to Claims 1 and 2, characterized by the fact that arms (43) are integrally formed on the section (26) of the spindle (4) radially to the spindle central axis (42), wherein said arms adjoin a holding element (16) arranged on the brush (5, 28) or the polishing pad (14) in a clamping fashion when the brush (5, 28) or the polishing pad (14) is attached to the spindle (4).
5. The cleaning device according to Claim 4, characterized by the fact that the base plate (15) of the brush (5, 28) or the polishing pad (14) contains a recess (19) with the holding element (16) for receiving the section (26) of the spindle (4).
6. The cleaning device according to Claim 5, characterized by the fact that the holding element (16) is realized in the form of a clamping ring (43) that is mounted in a slot-shaped groove of the recess (19) and consists of an annular base body (54), in which slots (45) assigned to the arms (43) are arranged such that elastic holding tabs (44) are formed.
7. The cleaning device according to Claim 5, characterized by the fact that the holding element (16) consists of a hollow body (46) that is inserted into the recess (19), wherein

slot-shaped grooves (47) assigned to the arms (43) are arranged in the inner wall of said hollow body.

8. The cleaning device according to Claims 1-7, characterized by the fact that a spring-loaded push rod (48) extends through the spindle (4), wherein the brushes (5, 28) or the polishing pads (14) can be disengaged from the section (26) of the spindle (4) by means of said push rod.

9. The cleaning device according to Claims 1-3, characterized by the fact that the electric motor (2) is connected to spindle (4) by means of a gear (7).

10. The cleaning device according to Claim 1, characterized by the fact that a charging contact element (23) connected to the storage battery (3) is arranged in the device housing (6) in the region of the storage battery (3), wherein said charging contact element can be connected to an electric charging device (8).

11. The cleaning device according to Claim 10, characterized by the fact that the electric charging device (8) is arranged in a recess (9) of a device set case (10, 53), into which the device holder (1) can be inserted.

12. The cleaning device according to Claims 10 and 11, characterized by the fact that the electric charging device (8) can be connected to a wall outlet (12) by means of a cable (11).

13. The cleaning device according to Claim 10, characterized by the fact that the charging device (8) is arranged in the device housing (6).

14. The cleaning device according to Claims 11-13, characterized by the fact that recesses (13) for storing brushes (5, 28), polishing pads (14) and the like are arranged in the device set case (10, 53).

15. The cleaning device according to Claims 1-15, characterized by the fact that each brush (5, 28) and each polishing pad (14) comprises a base plate (15), wherein the holding element (16) for the spindle (14) is arranged in one surface (31) of the base plate and a brush head (29) or a polishing pad head (30) is attached to the other surface (32) of the base plate.

16. The cleaning device according to Claim 15, characterized by the fact that the brush head (29) of the brush (5) is realized in the form of an annular brush (17) that extends along the periphery of the surface (32) and encompasses an insert (18) for accommodating a cleaning agent (22).

17. The cleaning device according to Claim 15, characterized by the fact that the brush head (29) of the brush (28) consists of bristles (33) that are arranged over the entire surface (32).

18. The cleaning device according to Claim 16, characterized by the fact that the insert (18) consists of a textile material.

19. The cleaning device according to Claims 14-17, characterized by the fact that the brushes (5) are arranged in the recesses (13) such that they are spaced apart from the bottom (21)

thereof and positioned above the respective cleaning agent (22) situated on the bottom (21) of the recesses (13).

20. The cleaning device according to Claims 14-18, characterized by the fact that the brushes (5) are separably clamped into position by means of a clamping ring (25) arranged in the outer wall (24) of the recesses (13).

21. The cleaning device according to Claim 19, characterized by the fact that the cleaning agent (22) is arranged in flat receptacle containers (34) open on one side, e.g., cans or the like, wherein the receptacle containers are supported on the bottom (21) of the recesses (13) and respectively covered by the brush head (29) of a brush (5).

22. The cleaning device according to Claim 15, characterized by the fact that the polishing pad head (34) consists of a cloth pad (35) that extends over the entire surface (32).

23. The cleaning device according to Claim 22, characterized by the fact that the cloth pad (35) is separably fixed to the base plate (15) by means of a clamping pin device (41).

24. The cleaning device according to Claims 1-13, characterized by the fact that the gear (7) can be adjusted by means of a changeover switch (36) in such a way that the spindle (4) and consequently the brush (5, 28) or the polishing pad (14) effects an oscillating, short-stroke rotary motion or a simple rotary motion.

The invention pertains to a hand-operated cleaning device with a motorized drive unit to which at least one rotating brush is connected.

Cleaning devices of this type are known in different variations.

The invention is based on the objective of developing a hand-operated portable cleaning device that contains a motorized drive unit and can be used for different cleaning tasks in connection with interchangeable rotating brushes. The cleaning device serves, in particular, as a motorized, hand-operated shoe-polishing device for household applications and while traveling.

According to the invention, this objective is realized with a device holder containing an electric motor that is connected to a battery or a storage battery and that is operatively connected on the output side to a rotatable spindle, wherein said spindle is separably connected to a brush or a polishing pad.

Embodiments of the invention are disclosed in the dependent claims and described in greater detail below with reference to the embodiments illustrated in the drawings. The drawings show:

Figure 1, a schematic representation of a cleaning device in the form of a sectioned side view;

Figures 2a-2c, side views of two brushes and a polishing pad;

Figures 3a-3c, bottom views the brushes and the polishing pad according to Figures 2a-2c-3c [sic];

Figure 4, an exploded side view of another embodiment of a cleaning device;  
 Figures 4a-4b, details of the brush head and the spindle of the device holder according to Figure 4;

Figure 5, a device set case with the cleaning device according to Figure 1 and different brushes and polishing pads;

Figure 6, a sectioned side view of the device set case according to Figure 5, and

Figures 7 and 8, a top view of and a cross section through another embodiment of the device set case.

The cleaning device 40 shown in Figure 1 may be used, for example, for polishing shoes, furniture and household appliances, as well as objects consisting of chrome, brass or silver and for polishing car bodies. The device is particularly suitable as a shoe-polishing device. The cleaning device 40 consists of a device holder 1, the housing 6 of which accommodates an electric motor 2 and a storage battery 3. Gears 7 are provided for coupling the output side of the electric motor 2 to a rotatable spindle 4, wherein a brush 5, 28 or a polishing pad 14 can be separably attached to the section 26 of said spindle that projects from the device housing 6. The storage battery 3 can be charged via a charging contact element 23. The cleaning device 40 is switched on and off by means of a corresponding switch 37 arranged on the device housing 6. The device is also provided with a changeover switch 36 that acts upon the gear 7 in such a way that the spindle 4 selectively carries out an oscillating, short-stroke rotary motion or a simple rotary motion.

The brush 5, 28 and the polishing pad 14 consist of a base plate 15, in one surface 31 of which a holding element 16 for the section 26 of the spindle 4 is arranged. The holding element 16 in the base plate 15 is realized in the form of a recess 19 with a guide arm 38, wherein said guide arm is inserted into a groove 39 in the section 26 of the spindle 4. It is also possible to provide the brushes 5, 29 and the polishing pad 14 with a spindle that can be inserted into a rotatable holding section of the spindle 4 recessed into the plane of the device housing 6.

A brush head 29 of the brush 5 is attached to the other surface 32 of the base plate 15, wherein the brush head consists of bristles that are arranged in the form of an annular brush 17 along the periphery of the surface 32 and enclose an insert 18 for accommodating a cleaning agent 22. The insert 18 may consist, for example, of a textile material. The brush head 29 of the brush 28 consists of bristles 33 that are arranged over the entire surface 32. This brush 28 can be used, in particular, for precleaning objects that require the removal of dirt prior to the application of a cleaning agent. The polishing pad head 34 arranged on the base plate 15 of the polishing pad 14 consists of a cloth pad 35 that extends over the entire surface 32. The cloth pad 35 can be separably fixed on the base plate 15, for example, by means of a clamping device 41.

Figure 4 schematically shows another embodiment of the device holder 50. A spring-loaded push rod 48 extending through the spindle 4 can be actuated by means of a push-button 52. When pressure is exerted upon this push-button, the push rod 48 is displaced and its point 55 presses against the brush head 5, 28 or the polishing pad 14 in the recess 19 such that it disengages from the section 26 of the spindle 4. Arms 43 are integrally formed onto the section 26 of the spindle 4 radially to the central axis 51 of the spindle 4. When a brush 5, 28 or polishing pad 14 is attached to the spindle 4, these arms are operatively connected to a holding element 16 arranged on the brush 5, 28 or the polishing pad 14 so as to be clamped fashion. This holding element 16 may be realized in the form of a hollow body 46, the inner wall of which contains slot-shaped grooves 47 assigned to the arms 43. When attaching the brush 5, 28 or the polishing pad 14, the arms 43 of the spindle 4 are guided in the slot-shaped grooves 47 in such a way that the brush 5, 28 or the polishing pad 14 is fixed to the spindle 4. Figure 4 indicates that it is also possible to realize the holding element 16 in the form of a clamping ring 43 that consists of an annular base body 54. Slots 45 assigned to the arms 43 are arranged in this base body such that elastic holding tabs 44 are formed. The clamping ring 43 may be fixed on the brush 5, 28 or on the polishing pad 14 in a slot-shaped groove arranged in the region of the opening of the recess 19.

The device holder 1 as well as the brushes 5, 28 and the polishing pad(s) 14 can be stored in a device set case 10 (Figures 5 and 6). The device set case 10 is provided with corresponding recesses 9 and 13 in the base body 27. The recess 9 serves for accommodating the device holder 1 and contains a charging device 8 in its bottom surface. This charging device can be connected to the charging contact element 23 of the device holder 1. The charging device 8 can be connected to a wall outlet 12 by means of a cable 11. The brushes 5, 28 and the polishing pad 14 are held in the recesses 13 by clamping rings 25 that are respectively inserted into the outer walls 24 of these recesses. The base plate 15 of the brushes 5, 28 or polishing pads 14 comes in contact with these clamping rings 25. The cleaning agent 22 is arranged above the bottom 21 of each recess 13, wherein the cleaning agent comes in contact with the respective insert 18 and the annular arrangement of bristles 17 when the brush 5 is inserted into the recess 13. The cleaning agent 22 is preferably accommodated in flat receptacle containers 34 that are open on one side, for example, cans or the like. These receptacle containers are supported on the bottom 21 of the recesses 13 and respectively covered with the brush head 29 of a brush 5. The cleaning agent 22 may consist of, for example, shoe polish. In this case, the brushes 5 inserted into the recesses 13 prevent the shoe polish from drying out and are also rigidly held in position. When using the cleaning device 40, the shoes to be polished can be initially precleaned by means of the brushes 28. A suitable brush 5 is then selected depending on the shoe color and connected to the spindle 4 of the device holder 1. In order to provide the brush head 29 with a sufficient quantity of shoe

polish, the changeover switch 36 is actuated such that the brush 5 initially carries out an oscillating, short-stroke rotary motion. Subsequently, the gear 7 is changed over again such that the shoe polish can be applied to the shoes while the brush 5 carries out a simple rotary motion. The final polishing is carried out with the polishing pad 14, which is attached to the spindle 4 after the brush 5 is removed. The polishing pad 14 usually carries out a simple rotary motion. However, it may also be practical that the polishing pad carries out an oscillating, short-stroke, rotary motion in special instances. After the cleaning process is completed, the device holder 1 as well as the brushes 5, 28 and the polishing pad 14 are once again stored in the device set case 10. The base body 27 of the device set case 10 may also be provided with a cover such that the set consisting of device holder 1, the brushes 5, the polishing disk 14 and device set case 10 can also be used as a portable cleaning device.

Figures 7 and 8 show a device set case 53 that contains only two recesses 13 for a brush 5, 28 or a polishing pad 14 and a recess 9 for the device holder 1, 56. The device set case 53 consists of a bottom part 58 and a cover 60. The cover is connected to the bottom part 58 by means of a hinge 59. When the cover 60 is closed, it can be separably engaged with the bottom part 58 by means of a not-shown element. This device set case 53 is particularly suitable for portable cleaning devices that ideally require only one brush 5 and one polishing pad 14. In such instances, the recess 9 preferably accommodates a device holder 1 or 56 with an electric charging device 8 integrated into the device housing 6. This improves the functionality of the cleaning device in terms of its dependence on an external power supply.

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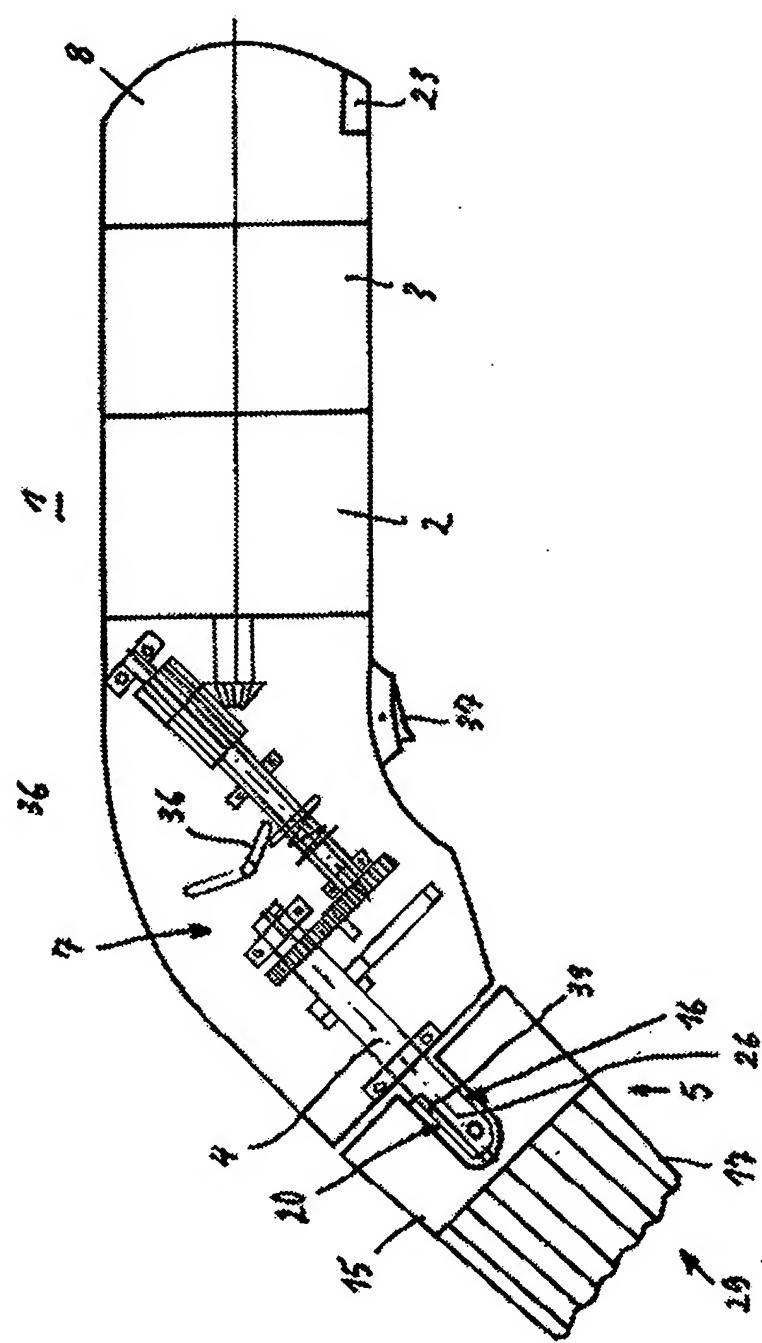


Fig. 3a

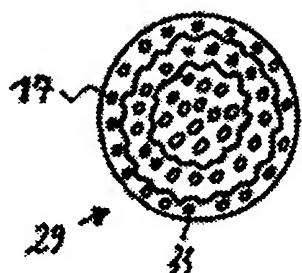


Fig. 2a

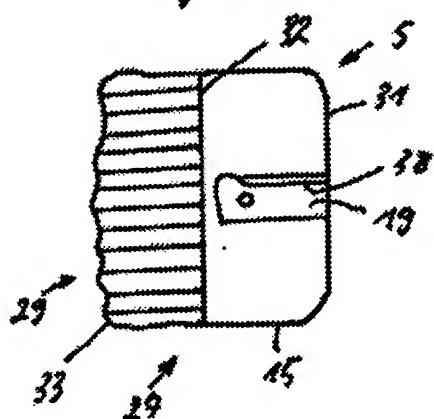


Fig. 3b

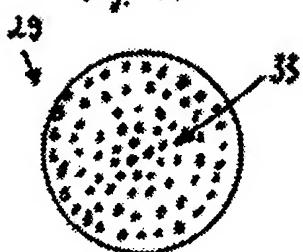


Fig. 2b

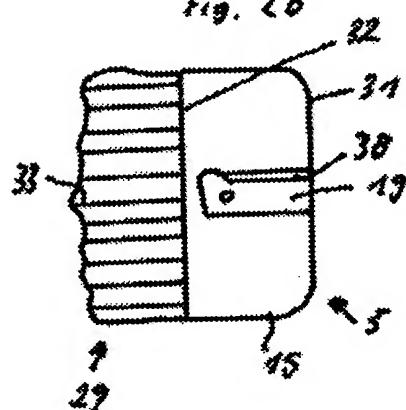


Fig. 3c

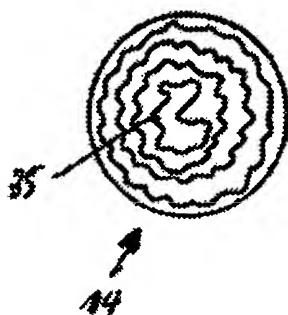
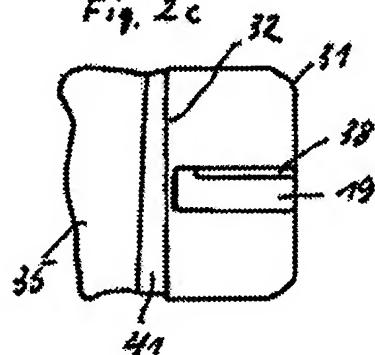


Fig. 2c



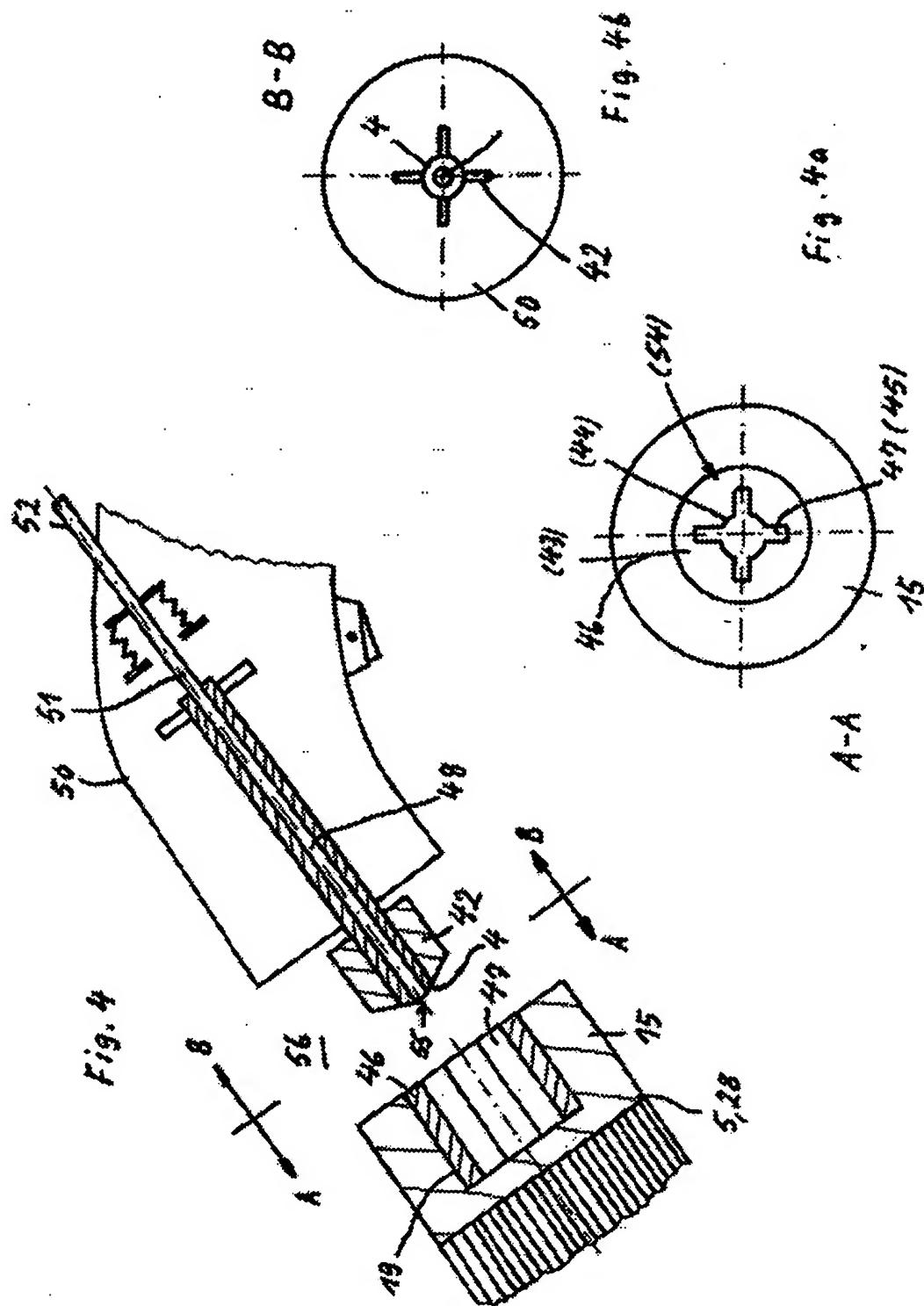


Fig. 5

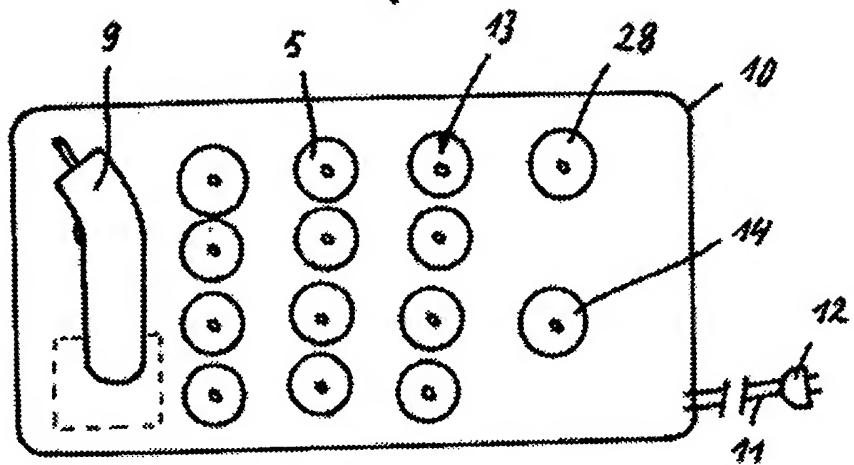


Fig. 6

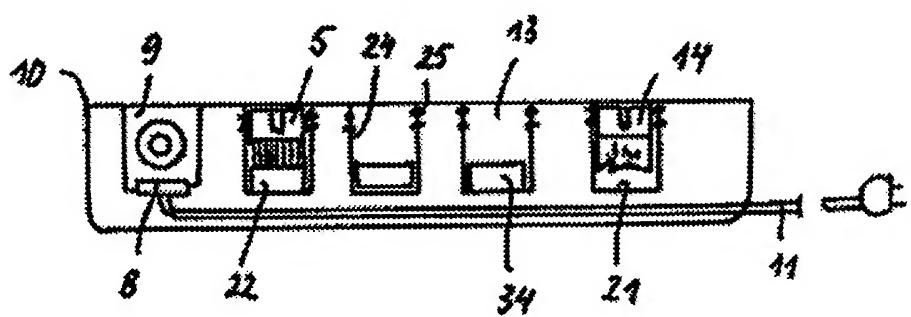


Fig. 7

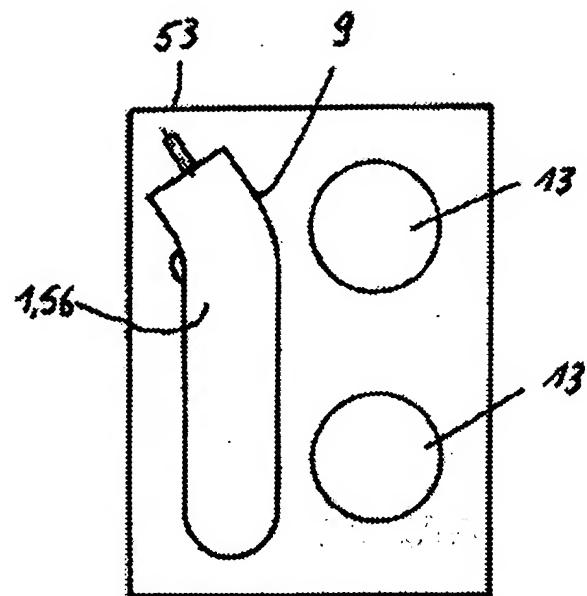
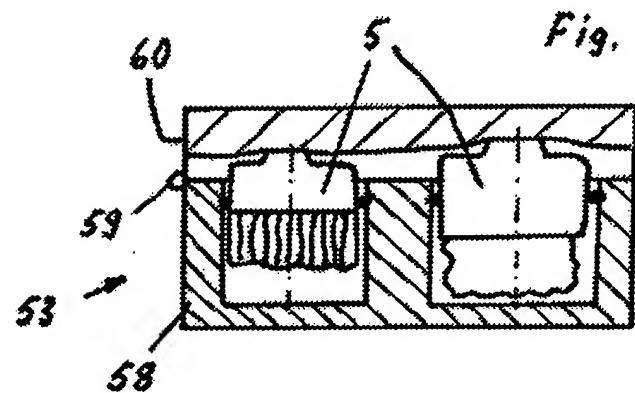


Fig. 8



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